

Operational Excellence (OE)

Management System

Requirements, guidances
and assessment criteria

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Operational Excellence (OE) Management System

*Requirements, guidances and
assessment criteria*

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Dedication and Acknowledgement

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"In The Name of Allah, The Most Beneficent, The Most Merciful".

With all the praise to Allah swt, I managed to compile the knowledge and best practice in Operational Excellence.

As we face a monumental challenge to business toward a competitive and productive organization, we have the great potential ahead with "*improvement culture*". The future is on its ways, with the right thinking and efforts, we would be able to gain more and provide more values to our business.

I was first introduced to *Operational Excellence*, 20 years ago in year 2000 at Lucas automotive (Introduced by TRW Automotive). At that time, TRW operational excellence followed 5 phases of Womack and Jones "Lean Thinking". I attended several rounds of training including Lean Mentor, and Six Sigma Black Belt. At the same time, we embarked on ISO9001 version 2000 and later on ISO/TS16949 version 2002. Then, I realised that any improvement activities that can link to operation either from product innovation, shopfloor improvement, quality control circle, six sigma project, Lean workshop (Blitz Kaizen) should have the same platform, which is "Operational Excellence". And this platform should be managed the same way, as we managed other management system such as quality management system that according to Plan, Do, Check and Action cycle. The platform should be auditable to verify whether it is

sufficient to produce effective improvement activities and result. Hence, this book is compilation best practice in operational excellence based on my knowledge and experience as Lean Mentor, Six Sigma Master Black Belt, IATF auditor, Certification Director, and Business Owner.

I dedicated the book to:

- To my parents, who show me the way;
- To my family, who inspire me;
- To my teachers, who share their knowledge;
- To my staff, who support me all the ways;
- To my friend, who assist their thought;
- To all the business owner, who care for their business and employees
- To all people in this world, who cherish the colourful and peaceful life.

Thanks to Malaysia Productivity Corporation (MPC), Asia Productivity Organization (APO) for providing the trust and continuous support to me. Not to forget to all my clients and friend who share their taught. Thank you very much.

Dr. Edly Ramly

EFR Certification May 2020

Introduction

Victors Inc. (not a real company name) is a vibrant organization that always striving for the best, especially in their operational process. However, Victors Inc. struggle to determine which of the approaches that they need to start with and what is the maturity point for their continual improvement and operational excellence initiatives. For past ten years, Victors Inc. have been approached by several quality and productivity consultants to improve their operational performance including lean production system and several type of ISO certifications. Most of the program bring minimum impacts. At one point, Victors Inc. was hounding to recover several million dollars of debt due to operational inefficiency.

However, based on the most recent visit, Victors Inc. had no outstanding debts, won gold medal in “Team Excellence” event, and increase of sales. The growth is evidences from normal shop-lot operation to proper factory building and facilities.

What are the approaches that Victors Inc. adopted?

They call it systematic and measurable “Operational Excellence” approaches.

"Operational Excellence" is about effective and efficient principles in operation. It is about organization trying to improve their operation so that they can make it better. Operational excellence can simply be described as a philosophy that embraces problem-solving and leadership as the key to continual improvement. It is logical and consistent process to tackle operational problems by determining the "cause" and take action to eliminate or minimised the occurrence of cause and effect. The process required some basic principles in order to make

OPERATIONAL EXCELLENCE – Management System

the initiative successful, hence the organization is consistently maintaining the continual improvement culture in all aspect of their operation.

Operational excellence, however, is not just a set of improvement activities that you perform. It is an improvement mindset that should be present within you and your employees. You are probably thinking, “that sounds nice in theory, but how can we translate this into actionable steps?” Continuous improvement is the on-going effort to improve an organization’s processes, products, or services. It usually takes place incrementally over time. Some improvement may require breakthrough innovation. By pursuing continuous improvement, an organization has a greater likelihood of continuing to maintain and build on these improvements. Even continuous improvement is important, it is not enough on its own. As the organization continues to refine its process, product, or service, it needs a way to continue to grow. This is where operational excellence comes in.

Operational excellence is a mindset that embraces certain principles and tools to create sustainable continual improvement within an organization. To put it more simple, operational excellence is achieved when every member of an organization can sees the flow of value to the customer and actively try to improve both the value, as well as its delivery. Operational excellence reduce operational costs and increasing productivity in the workplace. Ultimately, it is about creating the company culture that will allow you to produce valuable products and services for your customers and achieve long-term sustainable growth. Operational excellence is a journey that involves applying the right tools to the right processes. When this happens successfully, the ideal work culture is created. Employees are provided with knowledge that enables them to stay empowered and motivated. To start the journey, the organization may require the operational excellence management system (OEMS).

There are three elements of operational excellence (OE) management system that the organization should consider. The first

OPERATIONAL EXCELLENCE – Management System

element is the “**minimum requirements**” or the structure of the operational excellence management system. The second element is the “**operational excellence approach and guidance**” and the third element is “**operational excellence assessment criteria**”.

Hence, this book is divided into three parts. The first section, focuses on background of operational excellence and proposed the minimum requirements of operational excellence management system that the organization should develop, implement and maintain the operational excellence initiatives. This requirement is adopted from ISO9001 version 2015 that emphasised on the PDCA (Plan – Do- Check and Action). These minimum requirements provide baseline for the organization to adopt the operational excellence. At the same time the requirement is auditable to ensure the compliance to the minimum requirements. While third party external body can provide the operational excellence certification service to organization, and client can ensure their suppliers are embarking on operational excellence.

The second part of the book provide the intent and guidance for use of the operational excellence management system. There are several techniques and tools recommended for organization to adopted and implement. Over the years, numerous methodologies have been introduced to the mainstream business culture as a method of achieving operational excellence. In this book, blended methodology that aligned and integrate several methodology including kaizen, lean, six sigma, 8-Discipline is introduced through I-D-E-A concepts

The third part of this book provide the assessment criteria of operational excellence. The assessment criteria blended several principles such as based on business excellence category, Shingo Model and industry revolution 4.0 concept. The assessment criteria can be used to determine which level of operational excellence adopted and implemented in organization.

Table of Contents

Contents

Introduction.....	1
PART I.....	10
Background and Recommended operational excellence requirements.....	11
Chapter 1	12
Background of Operational Excellence.....	12
1,1 Operational Excellence Overview.....	13
1.2 Concepts of Operations Excellence	13
1.3 Evolution of Operation Excellence Management System.....	17
1.4 Approaches, Tools and Techniques within Operational excellence.....	19
1.5 Operational Excellence Diagnosis	21
1.6 Operational Excellence Management System- requirements and assessment criteria benefits	27
1.7 Operational excellence management principles.....	31
Chapter 2	32
Operational Excellence Management System Requirements.....	32
2.1 Introduction.....	33
2.1.1 Model of operational excellence	33
2.1.2 Applicability and goal of operational excellence management system	34
2.2 Operational excellence leadership.....	34
2.2.1 Leadership and commitment.....	34
2.2.2 Operational Excellence Policy	35
2.2.3 Operational excellence context	36
2.2.4 Operational excellence objective and operational excellence strategic plan.....	36

OPERATIONAL EXCELLENCE – Management System

2.3	Operational excellence planning	37
2.3.1	Determining the scope of the operational excellence.....	37
2.3.2	Operational excellence and its processes	37
2.3.3	Operational excellence risks and opportunities.....	38
2.3.4	Operational excellence infrastructure.....	38
2.3.5	Operational excellence knowledge.....	38
2.3.6	Operational excellence communication and documented Information.....	39
2.4	Operational excellence teamwork	40
2.4.1	Operational excellence roles, responsibilities and authorities.....	40
2.4.2	Operational excellence team	40
2.4.3	Operational excellence competency.....	40
2.4.5	Motivation for operational excellence process.....	40
2.5	Operational excellence implementation process	41
2.5.1	Operational excellence program.....	41
2.5.2	Determine and select operational excellence projects.....	41
2.5.3	Operational excellence projects approaches.....	42
2.5.4	Reporting operational excellence project.....	44
2.5.5	Assessing operational excellence project.....	44
2.5.6	Changes initiate from operational excellence project	44
2.6	Operational excellence management system performance evaluation	46
2.7	Operational excellence management system improvement	47
PART 2	48
	Operational excellence management system adoption guide.....	48
Chapter 3	49
Operational excellence management system requirements – Intents and guidance for use	49
3.1	Main Intents	50

OPERATIONAL EXCELLENCE – Management System

3.1.1 Chapter/ clause arrangement	50
3.1.2 Operational excellence principles intent and source	53
3.1.3 Applicability of operational excellence intent	56
3.2 Operational excellence leadership intent	57
3.2.1 Leadership and commitment intent and guidance	57
3.2.2 Operational Excellence Policy intent and guidance	58
3.2.3 Operational excellence context intent and guidance	60
3.2.4 Operational excellence objective and operational excellence strategic plan intent and guidance	61
3.3 Operational excellence planning intent	61
3.3.1 Determining the scope of the operational excellence intent and guidance	62
3.3.2 Operational excellence and its processes intent and guidance	63
3.3.3 Operational excellence risks and opportunities intent	64
3.3.4 Operational excellence infrastructure intent and guidance	64
3.3.5 Operational excellence knowledge intent and guidance	66
3.3.6 Communication and Documented Information intent and guidance	66
3.4 Operational excellence teamwork intent	67
3.4.1 Operational excellence roles, responsibilities and authority intent and guidance	68
3.4.2 Operational excellence team intent and guidance	70
3.4.3 Operational excellence competency intent and guidance	70
3.4.4 Motivation for operational excellence process intent and guidance	71
3.5 Operational excellence implementation process intent	73
3.5.1 Operational excellence program intent and guidance	73
3.5.2 Determine and select operational excellence projects intent and guidance	75

OPERATIONAL EXCELLENCE – Management System

3.5.3 Operational excellence projects approaches intent and guidance	76
3.5.4 Reporting operational excellence project intent and guidance	76
3.5.5 Assessing operational excellence project intent and guidance	78
3.5.6 Changes initiate from operational excellence project intent and guidance.....	80
3.6 Operational excellence performance evaluation intents and guidance	80
3.7 Operational excellence improvement intents and guidance	81
Chapter 4	83
Operational excellence project selection	83
4.1 I-D-E-A techniques	84
4.2 I - Initiation of operational excellence	84
4.3 D - Diagnosis process	86
4.4 E - Evaluation process.....	93
4.5 A – Action for project selection.....	100
Chapter 5	109
Operational excellence approaches	109
5.1 Introduction	110
5.2 Project planning	112
5.3 Cause Analysis/ Process Analysis.....	116
5.4 Implementing improvement action	117
5.5 Verify effectiveness	118
PART 3.....	120
Operational excellence assessment criteria	120
Chapter 6	121
Operational excellence management system – Assessment	
Criteria.....	121
6.1 Operational excellence assessment model	122

OPERATIONAL EXCELLENCE – Management System

6.2 Operational excellence assessment methodology	125
6.3 Operational excellence scoring criteria	128
6.4 Operational excellence assessment criteria	136
6.4.1 How to use the operational excellence assessment criteria	136
6.4.2 Operational Profile	139
6.4.3 Category 1 – Operational excellence leadership	141
6.4.4 Category 2 –Operational excellence planning	143
6.4.5 Category 3 –Operational excellence teamwork.....	145
6.4.6 Category 4 –Operational excellence implementation.....	146
6.4.7 Category 5 –Operational excellence result.....	149
Glossary, Abbreviation and Vocabulary.....	151
References	152
Bibliography.....	157

List of figures

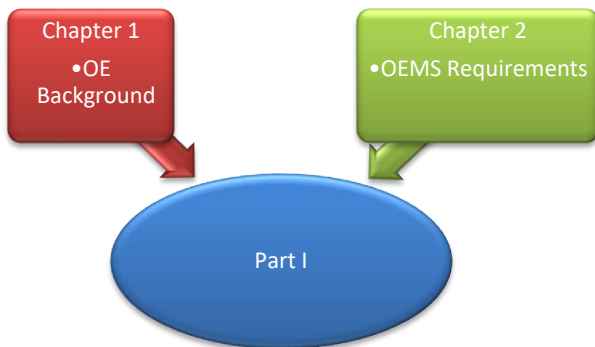
Figure 1.1 Overall interaction of operation process (Figure adopted from Slack et al., 2013, p.1)	14
Figure 1. 2 ISO 9001:2015 Interaction of Operation clause 8 and Improvement clause 10 (Figure adopted from (ISO, 2015, p. viii)	16
Figure 2. 1 Operational excellence model and interaction clause arrangement	33
Figure 3. 1 Operational excellence model in comparison with ISO9001 (2015) arrangement	51
Figure 3. 2 Shingeo model guiding principles	54
Figure 3. 3 A3 Reporting (Example)	78
Figure 3. 4 Example of judging criteria	79
Figure 4. 1 Step 1 – Operational Diagnosis	87
Figure 4. 2 Value Stream Mapping Process Zone.....	88
Figure 4. 3 Performance Criteria Tool Box	90
Figure 4. 4 Step 2 - Evaluation process	93
Figure 4. 5 Ishikawa Diagram.....	95
Figure 4. 6 Recommended Cause Category from Why 1 to 5 ...	96
Figure 4. 7 Step 3 (Action for project selection).....	101
Figure 5. 1 Choice of action vs special and common cause.....	111
Figure 5. 2 Sample of Project Charter.....	115
Figure 6. 1 Level of OE Maturity	123
Figure 6. 2 Operational excellence model and assessment criteria category arrangement.....	124

List of Table

Table 1. 1: Example of Approaches, Techniques and Tools in Six Sigma and Lean.....	20
Table 1.2: Example of Techniques and Tools relevant to operational excellence process and their application	22
Table 1.3: Adoption of approached on operational excellence requirements, assessment & Tools and Technique	25
Table 4. 1 Common operation process and their performance indicator	90
Table 4. 2 : List of Common Issues	94
Table 4. 3 List of Issues - Opportunities for Improvement (SAMPLE)	98
Table 4. 4 : Recommended operational improvement approaches	102
Table 4. 5 : Initial list of Improvement Tools and Techniques by Cause-category.....	104
Table 4. 6 : Example of cause category and tools and techniques	104
Table 4. 7: Pay-off criteria	105
Table 4. 8 : Organization fit criteria.....	107
Table 4. 9 : Strategic fit criteria	107
Table 5. 1 : Project planning stages for different approaches	112
Table 5. 2 : Cause analysis stages for different approaches.....	117
Table 5. 3 : Implementing improvement action stages for different approaches.....	118
Table 5. 4: Verify effectiveness stages for different approaches	119
Table 6. 1 Type of conformity and non-conformity.....	129
Table 6. 2 Common scoring dimension	130
Table 6. 3 Simplified A-D-L-I	134

PART I

Background and Recommended operational excellence requirements



Chapter 1

Background of Operational Excellence

1.1 Operational Excellence Overview

It is accepted that one of the most important part of operation management is operations improvement (Slack et al., 2013). Therefore, this chapter will explore and provide an overview of the concept of operation improvement that lead toward the term of ***operational excellence*** which includes the definitions, synonym, and common application in operational excellence. Miller (2014) defined operational excellence ***as relentless pursuit of doing things better.***

1.2 Concepts of Operations Excellence

Defining Operation

Throughout this book, the term “Operation”, “Operations”, and “Operational” will be used interchangeably. According to Oxford advance dictionary (Hornby, 2005), the term “Operation” is denoted as a noun and defined as “*The action of functioning or the fact of being active or in effect*”. While the term “Operational” is referred to as an adjective and defined as “*ready for use*”.

In view of overall operation process with regards to operations, Figure 1.1 depicts the relationship between operation management, operation improvement and other processes such as design, and planning and control. In six-sigma, the operations normally referred to SIPOC (Supplier-Input-Process-Output-Customer) and in lean production system, the operation normally refer to process value stream.

OPERATIONAL EXCELLENCE – Management System

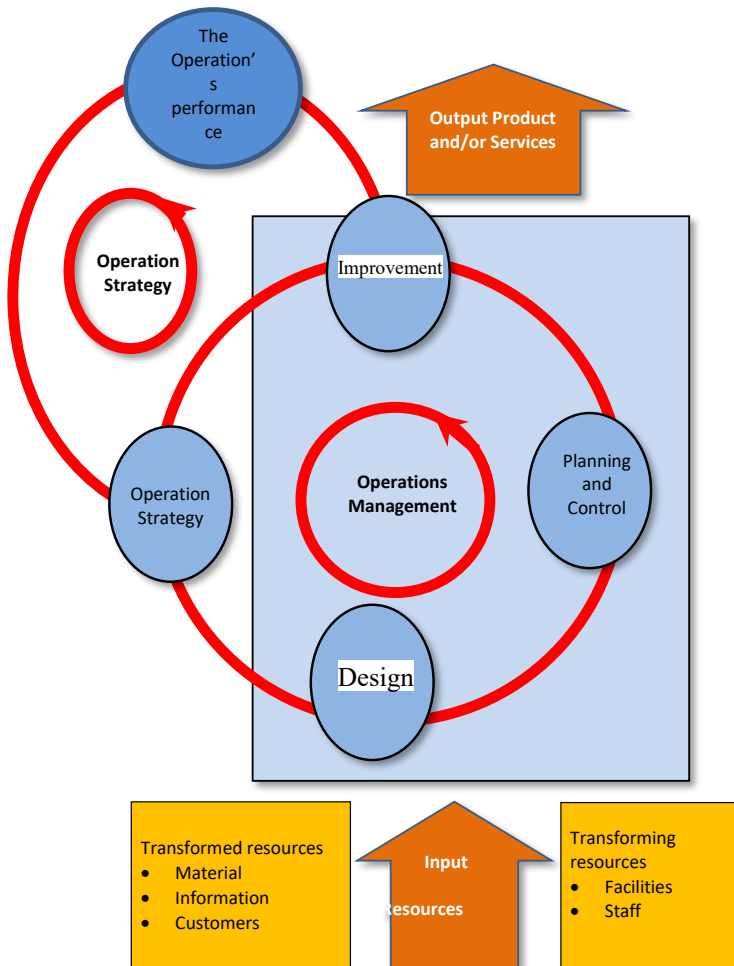


Figure 1.1 Overall interaction of operation process (Figure adopted from Slack et al., 2013, p.1)

OPERATIONAL EXCELLENCE – Management System

Equally, operation is also defined as the input and output to deliver customer value (ISO, 2015; Baldrige, 2015; Slack *et al.*, 2013; Yeung, 2009). For example, in ISO9001 (2015) the clause on operations covers the operation processes which included the operation planning, marketing (sales) process, design and development process, production process, handling product/ service non conformity and complaints, supply chain process that included delivery, purchasing and warehouse. Hence, the term “Operations” and “Operational” in this book refers to 2017-2018 Baldrige Excellence Framework category 6, which cover the work process (cover input and output) to deliver customer value (Baldrige, 2015), ISO (2008) clause 7- Product Realization and ISO (2015) clause 8 - Operation. Operations are the activities which produce and deliver products and services. The operation process may include manufacturing process, delivery process, purchasing and receiving supply.

Similarly, in the revised version of ISO9001 standard (from 2008 edition to 2015 edition), the term of product realization was replaced with Operation. The Operation term is appeared in clause 8 of ISO9001 and the interaction of operation and improvement depicts in Figure 1.2, relationship between operation and Plan, Do, Check and Action (PDCA) cycle.

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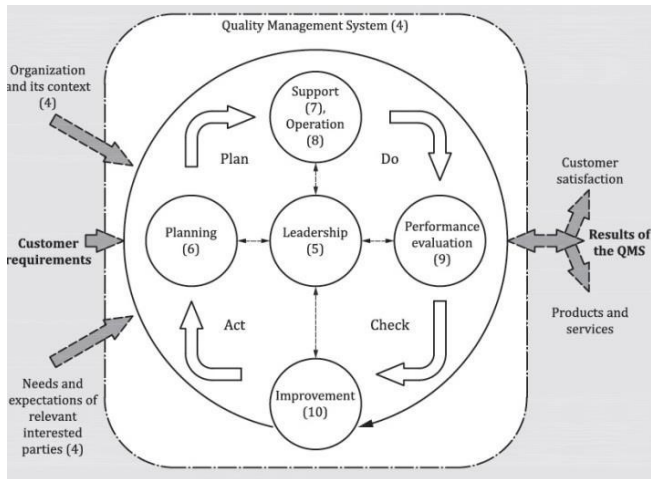


Figure 1. 2 ISO 9001:2015 Interaction of Operation clause 8 and Improvement clause 10 (Figure adopted from (ISO, 2015, p. viii))

Defining Operational Excellence

On the other hand, operational excellence makes a reference to continuous improvement as part of component of total quality management (Slack *et al.*, 2013, p508, 539; Adebajo *et al.*, 2015). The concept of continuous improvement was first introduced in quality management and was then associated with the Japanese approach called kaizen (Imai, 1986; Thawesaengskulthai & Tannock, 2008a). Kaizen concept has been extensively praised as a proven approach in improving operational performance (Paul & New, 2003). So far to date, kaizen have been adopted in various organization strategies such as Toyota Production System, Operational Excellence, and Lean Improvement (Olhager, 2013; Pakdil & Leonard, 2014; Rahani & al-Ashraf, 2012). A part from that, Kaizen was also been adopted in ISO9001 standard of quality management system.

OPERATIONAL EXCELLENCE – Management System

In ISO9001 version 2000, 2008 and 2015, Kaizen have been referred as “Continual Improvement (CI)”. The terms CI and quality improvement (QI) were frequently quoted in literatures. According to the definition provided by ISO9000 Fundamental and Vocabulary for Quality Management System (ISO, 2005), QI and CI have been defines as follows:

“QI is part of quality management focused on increasing the ability to fulfil quality requirements and the requirements can be related to any aspect such as effectiveness, efficiency or traceability.” (p.9)

“CI have been define as recurring activity to increase the ability to fulfil requirements such as the process of establishing objectives and finding opportunities for improvement is a continual process, through the use of audit findings and audit conclusions, analysis of data, management reviews or other means and generally leads to corrective action or preventive action.” (p.5)

Numerous terms are used to describe operational excellence; the most common are business process improvement, performance improvement, quality improvement (QI), continuous improvement (CI), and kaizen. All these terms have the common goal which is to increase the operational effectiveness, efficiency, and traceability.

1.3 Evolution of Operation Excellence Management System

Reductionism theory and System theory from the field of scientific management are among the theories that can applied in operational excellence (Johnson *et al.*, 1964). However, reductionism have been

OPERATIONAL EXCELLENCE – Management System

challenged by holism in the form of system theory by botanist, Ludwig von Bertalanffy in 1940s (Simons & Taylor, 2007). Since then, the system theory has become one of the major theory in operations management and operations improvement. For the concept of operational excellence, Johnson *et al* (1964) stated that;

“The business organization is a man-made system which has dynamic interplay with customers, competitors, suppliers, government and many other interested party in order to produce the desired output and goals. Regardless of specific adjustments or organizational arrangements, there are certain subsystems which make up a total information-decision system. The system concept call for integration, into a separate organizational system, of activities related to projects or operations improvements.” (p.383)

The statement “total information-decision system” has been commonly referred to operation improvements or operational excellence. In addition to system theory, the contingency theory (Kast & Rosenzweig, 1985) seeks to understand the relationship between the “subsystem” that make up the operational excellence. Part of overall system approaches may include subsystem approaches such as Business process improvement methodologies (Bendell, 2005), and performance improvement (Kaplan & Norton, 1996).

While, a management system is a set of policies, processes and procedures used by an organization to ensure that it can fulfill the tasks required to achieve its goals. These goals cover many aspects of the organization's operations (including financial success, safe operation, product quality, client relationships, legislative and regulatory conformance and worker management). For instance, for an operational management system management system enables

OPERATIONAL EXCELLENCE – Management System

organizations to improve to increase the operational effectiveness, efficiency, and traceability.

Many parts of the management system are common to a range of goals, but others may be more specific. A simplification of the main aspects of a management system is the 4-element "Plan, Do, Check, Act" approach. A complete management system covers every aspect of management and focuses on supporting the performance management to achieve the goals. The section 1.4 examine and describe the common approaches, tools, and techniques in operational excellence.

1.4 Approaches, Tools and Techniques within Operational excellence

Based on common terms of operational excellence such as business process improvement, performance improvement, continuous improvement, kaizen, QI or CI, there are more than 1000 improvement initiatives available (Mohammad, 2011). According to Mohammad (2011), the initiative should be further categorised into approaches, management system, tools and/or techniques to ease the process of understanding and selecting the relevant approaches, tools, and techniques. Approach and management system can be considered in one category. This is due to the reason that both approach and management system require resources, senior management commitment, strategic planning, and an intellectual effort in term of its deployment and adoption (Van der Wiele *et al.*, 2006). Likewise, the management system also needs resources to direct and control some form of operation.

OPERATIONAL EXCELLENCE – Management System

On the contrary, based on ISO9000:2005 fundamentals and vocabulary of quality management system defined the improvement technique as a procedure to carry out the improvement approaches (ISO, 2005). An improvement technique may even be viewed as a collection of tools (Van der Wiele *et al.*, 2006). Besides that, tools can be defined as instruments that are employed to aid in performing a job (Hornby, 2005). Hence improvement tools are the tools that assist the organization to implement the improvement technique. The example of approaches, techniques, and tools within lean and sigma lists in Table 1.1.

Table 1.1: Example of Approaches, Techniques and Tools in Six Sigma and Lean

Approaches	Technique	Tools
Six Sigma DMAIC (Define-Measure-Analyse- Improve-Control)	i.e. Technique with Define are Project Charter, Performance measure, understand the process, and determine the potential cause.	SIPOC, Ishikawa diagram, VOC
Lean – Genba Kaizen	i.e. Techniques for visual management	Andon, Seiton in 5S
Business Process Re-engineering	i.e. Techniques for identification of Value-Added process cost	Activity Based Costing

However, in view of process in operational excellence, the approaches, techniques, and tools can be further categorised into operational excellence process subsystem by determining their applications. According Slack *et al* (2013), the operational excellence process or subsystem can be categories to:

- 1) Operation performance measure, evaluation and analysis;
- 2) Operation diagnosis process;
- 3) Determine causes of operation issues;
- 4) Prevention of cause occurrence and recurrence.

OPERATIONAL EXCELLENCE – Management System

The applications of techniques and tools can be specific for data collection, data display and data analysis. While, other tools and techniques apply directly to actual workplace improvement implementation. For describing the applicable tools and techniques in operational excellence process, Table 1.2 provides some examples of techniques and tools and application operational excellence process. Nevertheless, there are more tools and techniques available depending on their purposes and application.

1.5 Operational Excellence Diagnosis

The operational improvement diagnosis is needed to benchmark what is the level of organization operational excellence adoption. This led to the need to develop the minimum requirements as recommend in chapter 2. This requirement is recommended as management system requirements to complement the ISO management system model such as ISO9001 since this model can be lead to certification process. However the ISO9001 model does not indicated the level of implementation as such Business Excellence (BE) model does such as the use of A-D-L-I (Adopt – Deploy – Learn – Integrate). Hence the discussion below provide some insight of the reason why ISO9001, Business Excellence Model and also Lean Six Sigma model is been used for diagnosing the operation excellence.

The field of operational improvement diagnosis evolved from of Continuous Improvement and Process Performance. Thawesaengskulthai (2007) reported that the improvement approaches of Six Sigma, Lean, Benchmarking, Balanced Scorecard (BSC) and Knowledge Management (KM) showed a significant increasing trends from year 2000-2006. While, TQM, Business Process Re-engineering (BPR) and ISO9001 reported a slight decrease

OPERATIONAL EXCELLENCE – Management System

in the hit and trend. Nonetheless, since 2003 the six sigma and lean approaches attention were amplified, and by year 2015 and 2016 there were ample number of literatures.

Table 1.2: Example of Techniques and Tools relevant to operational excellence process and their application

	techniques & Tools	Applications
Operation performance measure, evaluation, analysis	Balance Score Card	To outline the balance performance measure and link with organization strategy.
	Benchmarking	Method to set the performance target
	Hoshin plan	To link the performance measure with action plan
	Graph, scoreboard	To display the performance measure
Operation Diagnosis Process	Value stream mapping	To visualise the operation process linkage and identify potential waste
	Checklist	To provide aide memoir
	Observed-Question-Check	Method to collect evidence
	Product family and process matrix,	Method and display of linkage between product and operation process
Determine cause of operation issues	SPC Control chart	Method to determine the common & special cause.
	Design of Experiment	Method to determine the main effect/ interactive effects
	Brainstorming & Ishikawa Diagram	Method to determine potential cause and display the potential cause
Prevention of cause	Poka yoke	To prevent the human error

OPERATIONAL EXCELLENCE – Management System

TPM	Method to ensure the overall equipment effectiveness.
Kanban	Method to provide visual techniques in JIT system

Psomas and Fotopoulos (2009) indicated that the application of ISO9001 escalated with the increasing number of certificates issued. These findings are supported by the statistic survey published by Internal Organization for Standardisation. Based on the report published by ISO, in year 2011 itself, more than 1 million organizations worldwide certified to ISO9001 and continues up to 2015 with over 1.3 million organizations certified. At the same time, Dahlgaard *et al* (2013) indicated that the TQM and Business Excellence Framework (BEFs) were the most popular approaches for the past two decades and produce significant benefits for organization. In 2011, more than 80 nationals and state/regional awards which were based on their frameworks upon the Malcolm Baldrige National Quality Award (MBNQA) criteria or the European Foundation for Quality Management (EFQM)/European Excellence Award criteria (Mohammad *et al.*, 2011). On basis of popularity of operation improvement approaches, three categories were further investigated to determine their “diagnosis” approaches to select operation improvement opportunities. The three categories of approaches were:

- 1) Quality Management System;
- 2) Business Excellence Model; and
- 3) Lean Six Sigma.

For the organization to maintain their quality management system based on ISO9001 standard, the organization was required to undergo series of diagnosis process named as quality audits. Quality audit is one of the approaches that have been found to be useful to identify the current quality performance by diagnosing the

OPERATIONAL EXCELLENCE – Management System

opportunities for improvement and plan for improvement action. The structured quality audit approach based on established ISO19011 (ISO, 2011) was used to govern and provide guideline to identify gaps against the audit criteria. As reported by Karapetrovic & Willborn (2001), the quality audit is one of the approaches that have been found to be beneficial in providing manager with useful information in decision making through identification of past/current quality performance by examining relevant criteria. These findings were supported by Menda (2004) and Rajendran & Devadasan (2005) which showed that quality audit determines the organizations' strength, weaknesses, opportunities and threat of their operation by diagnosing the opportunities for improvement and plan for improvement actions.

Second prominent operation improvement diagnosis is organizational assessment using Business Excellence Framework (Mann, Mohammad, & Agustin, 2012). Ritchie & Dale (2000) indicated that the organizations need to monitor and diagnose the performance to sustain the continual improvement. Therefore, the Business Excellence (BE) framework can be used by organizations to improve organizational performance. This is done through a thorough assessment of organizational performance based on the internationally recognized BE framework to obtain external perspectives of organization's strengths and areas for improvement (Dahlggaard *et al.*, 2013). External BE assessments by external examiner provide an outsider's view on the health of the organization and enable the organization to be considered for a quality/ BE award. Achieving BE certification or winning a quality / BE award provides public recognition. BE assessments enable organizations to compare their performance against others both domestically and globally. (Mann, Mohammad, & Agustin, 2012)

OPERATIONAL EXCELLENCE – Management System

The third diagnosis approaches are six sigma and lean project selection. Recently, six sigma and lean approaches have received much attention in the literature and significantly increase number of articles since 2003. In six sigma improvement initiatives, the first step is to conduct diagnosis through strategic analysis driven by customer requirements and identify improvement opportunities (Chakravorty, 2009). This is to satisfy the famous “D” in DMAIC (Define-Measure-Analyze-Improve-Control) process in six sigma and identification. The concept of Six Sigma has been frequently aligned with lean. Clegg *et al* (2010) indicated that the continuous improvement project selection will lead toward either selecting the Lean or Six Sigma approaches for improvement. Selection of either Lean or Six Sigma projects are one of the most frequently discussed issues in the Six Sigma literatures today and various approaches proposed (Padhy & Sahu, 2011; Kornfeld, 2013).

The three most popular operation improvement initiatives, which are: 1) Quality Audit; 2) Business Excellence Assessment according to Business Excellence Framework (BEF); 3) Project Selection for Six Sigma and Lean project. Based on these operation improvement initiatives, the operational requirements and assessment criteria are developed as shown in Table 1.3. The development also considered operational improvement project such as Kaizen, Small Group Activities (SGA), Quality Control Circle (QCC), Team Excellence, and Innovative Creative Circle (ICC).

Table 1.3: Adoption of approached on operational excellence requirements, assessment & Tools and Technique

Criteria	QMS Standard i.e	Quality/ Business	Lean , Six Sigma
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OPERATIONAL EXCELLENCE – Management System

	ISO9001, ISO/TS16949	Excellence Award -BEFs i.e Baldrige	
Diagnosis Approaches	Quality Audit	BE Assessment	Project Selection
<i>Operational Excellence Adoption</i>	<i>Developed requirements that can be audited</i>	<i>Develop OE criteria that can be assessed</i>	<i>Integrate the approached in the requirements and assessment criteria</i>

1.6 Operational Excellence Management System-requirements and assessment criteria benefits

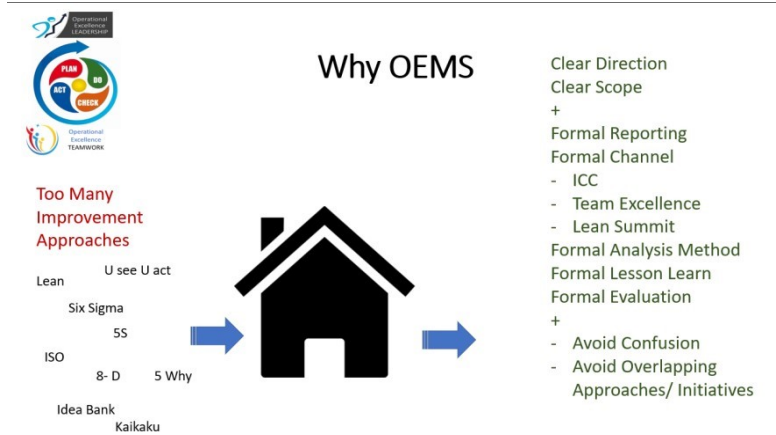
Operational Excellence Management System is a “System to establish policy and objectives, to achieve those objectives and to direct and control an organization with regard to Operational Excellence.” The base for management system is

- P lan
- D o
- C heck
- A ction

With regard to Operational Excellence.

Since there are too many approaches in implementing operational improvement, the operational excellence management system may assist the organization to select and adopt the suitable improvement approaches that meet the organization strategic needs. Even kaizen itself have four type of kaizen i.e. Kaizen Teian, Kaizen Events, Kaikaku, and Kakushin. That do not include other fashion setting improvement approaches i.e. lean, six sigma, Toyota Production System, and many more.

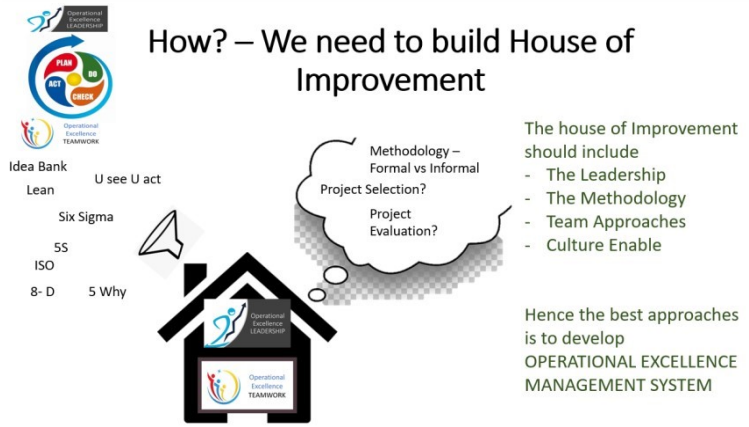
OPERATIONAL EXCELLENCE – Management System



The adoption of an “Operational Excellence” management system (OEMS) is a strategic decision for an organization that can help to improve its overall operational performance and provide a sound basis for sustainable development initiatives.

The potential benefits to an organization of implementing an operational excellence management system based on recommended requirements in chapter 2 of this book are:

- a) Initiate the continual improvement culture and performance, which leads to long-term sustainable growth;*
- b) facilitating an Operational Excellence implementation in early stage;*
- c) assist to adopt standard management system model of operational improvement;*
- d) the ability to demonstrate conformity to interested party in Operational Excellence implementation through certification process.*



OPERATIONAL EXCELLENCE – Management System

This operational excellence management system recommended requirements employs the approaches of ISO9001 version 2015 operational excellence requirement of process approach, which incorporates the Plan-Do-Check-Act (PDCA) cycle and risk-based thinking including the following terms are used:

— “shall” indicates a requirement;

Some of the term below is used that normally will refer to assessment criteria);

— “should” indicates a recommendation

— “may” indicates a permission;

— “can” indicates a possibility or a capability

While the benefits of operational excellent assessment criteria are:

- a) ability to benchmark the current continual improvement culture and performance, which leads to long-term sustainable growth through self-assessment;
- b) facilitating an Operational Excellence implementation further improvement;
- c) assist to adopt various forms of improvement in additional to correction and continual improvement, such as breakthrough change, innovation, re-organization, and industry revolution 4.0.
- d) Use the score for award purpose and distinguish the best operational excellence organization.

1.7 Operational excellence management principles

This Operational Excellence principle includes:

- **Cultural Enabler**
 - Leadership
 - Engagement of People
- **Continuous Improvement**
 - Improvement
 - Evidence-based decision making
- **Enterprise Alignment**
 - Process Approaches
 - Customer Focus
 - Risk Based Thinking
- **Results**

Detail explanation of the operational excellence principle is discussed in chapter 3.1.3 Operational excellence principles – Intents and source and chapter 5 – Recommended Operational Excellence Assessment Criteria.

Chapter 2

Operational Excellence Management System Requirements

2.1 Introduction

2.1.1 Model of operational excellence

The model for operational excellence management system adopted plan, do, check and action (PDCA) cycle with additional leadership block on top of PDCA cycle and team work at bottom of PDCA cycle as shown in figure 2.1. The term “Do” is change with “implementation” in the recommended requirements.

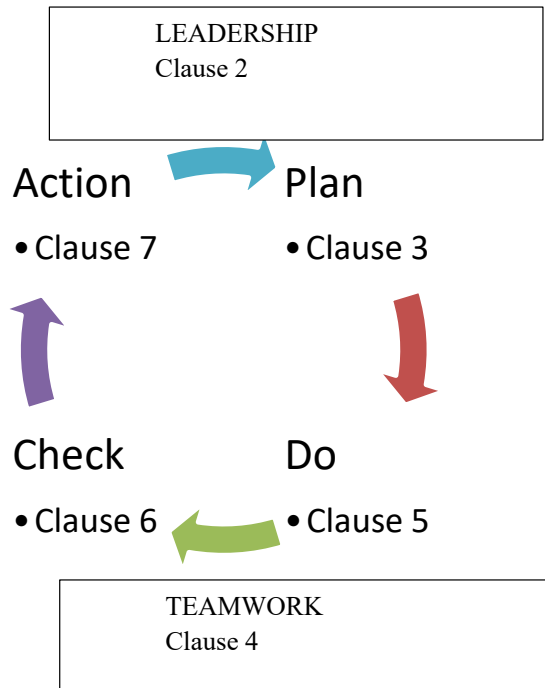


Figure 2. 1 Operational excellence model and interaction clause arrangement

OPERATIONAL EXCELLENCE – Management System

2.1.2 Applicability and goal of operational excellence management system

All the recommended requirements from this chapter are generic and are intended to be applicable to organization, regardless of its type or size, or the products and services it provides. This operational excellence recommended requirements can be used by any organization either public or private sector, profit, or non-profit organization from various industries. The requirement starts from next section.

The main goal and potential benefits to an organization of implementing an operational excellence management system are:

- a) Initiate the continual improvement culture and performance, which leads to long-term sustainable growth;
- b) facilitating an operational excellence implementation in early stage;
- c) assist to adopt standard management system model of operational improvement;
- d) the ability to demonstrate conformity to interested party in Operational Excellence implementation through certification process.

2.2 Operational excellence leadership

2.2.1 Leadership and commitment

Top management shall demonstrate leadership and commitment with respect to the operational excellence by:

- a) taking accountability for the effectiveness of the operational excellence;

OPERATIONAL EXCELLENCE – Management System

- b) ensuring that the operational excellence policy and operational excellence objectives are established for the operational excellence and are compatible with the context and strategic direction of the organization;
- c) ensuring the integration of the operational excellence requirements into the organization's business processes;
- d) promoting the use of the process approach and risk-based thinking in operational excellence process;
- e) ensuring and provide resources needed for the operational excellence are available including time, knowledge and expert to guide the operational excellence process;
- f) communicating the importance of effective operational excellence;
- g) ensuring that the operational excellence achieves its intended results;
- h) engaging, directing and supporting persons to contribute to the effectiveness of the operational excellence;
- i) promoting operational excellence culture;
- j) periodically review the effectiveness of operational excellence process;
- k) Provide reward and recognition of operational excellence project (s).

2.2.2 Operational excellence Policy

The organization shall establish (or integrate to other policy i.e. Quality Policy) operational excellence policy. The operational excellence policy shall include the commitment to:

- a) Implement the operational excellence project;
- b) Involve teamwork in operational excellence;
- c) Support and provide resources for operational excellence activities;

OPERATIONAL EXCELLENCE – Management System

- d) Continually improve the operational excellence management system.

The operational excellence policy shall be available as documented information and communicate throughout organization.

2.2.3 Operational excellence context

The organization shall determine the strength, weakness, opportunities, and threat (SWOT) that is relevant to the organization continual improvement process, and operational excellence policy and process. The organization shall maintain documented information of SWOT.

2.2.4 Operational excellence objective and operational excellence strategic plan

The organization shall develop the operational excellence objectives and develop the strategic plan to achieve the objectives.

At minimum, the operational excellence objective shall include the number of improvement project per year and number of team involved in improvement projects.

2.3 Operational excellence planning

2.3.1 Determining the scope of the operational excellence

The organization shall determine the boundaries and applicability of the operational improvement initiatives.

The scope of the organization's operational excellence initiatives shall be available and be maintained as documented information. The scope shall cover all the operational process.

2.3.2 Operational excellence and its processes

The organization shall determine and document the operational excellence processes and the process shall include:

- a) determine the inputs required and the outputs expected from operational excellence processes;
- b) determine the sequence and interaction of operational excellence processes;
- c) determine and apply the criteria and methods (including monitoring, measurements and related performance indicators) needed to ensure the effective operation and control of operational excellence processes;
- d) determine the resources needed for operational processes and ensure their availability;
- e) assign the responsibilities and authorities for operational excellence processes;
- f) address the risks and opportunities of operational excellence processes (see 2.3.3)
- g) evaluate operational excellence processes and implement any changes needed to ensure that these processes achieve their intended results (see 2.5);

OPERATIONAL EXCELLENCE – Management System

h) improve the operational excellence process (see 2.6).

2.3.3 Operational excellence risks and opportunities

The organization shall determine the risk and opportunities that relevant to operational excellence process and determine the action to address the risk and opportunities in operational excellence process.

The risk shall include the effect of uncertainty to achieve the operational excellence objective, the weakness, and the threat determine in the SWOT analysis (See 2.2.3).

The opportunities shall include the enhancement of the strength and opportunities determine in SWOT analysis (See 2.7).

2.3.4 Operational excellence infrastructure

The organization shall determine, provide, and maintain the operational excellence facilities for the purpose of team meeting and visual display of operational excellence results.

2.3.5 Operational excellence knowledge

The organization shall provide necessary information and knowledge to the operational excellence team to implement operational excellence project.

At minimum, the organization shall share the lesson learn from successful projects; capturing and sharing knowledge and experience; the results of previous improvements in processes, products, and services.

2.3.6 Operational excellence communication and documented Information

The organization shall communicate:

- a) operational excellence policy and objectives;
- b) operational excellence processes;
- c) operational excellence results;
- d) operational excellence lesson learns;

The organization's operational excellence documentation shall include:

- a) operational excellence policy and objectives;
- b) operational excellence scope;
- c) operational excellence processes sequence and interaction;
- d) operational excellence results;
- e) operational excellence lesson learns.

2.4 Operational excellence teamwork

2.4.1 Operational excellence roles, responsibilities, and authorities

The organization shall establish and maintain documented information that described the organization structure, responsibilities, and authority of operational excellence process.

2.4.2 Operational excellence team

The organization shall establish and develop the team for operational excellence project (see 2.5).

2.4.3 Operational excellence competency

The organization shall determine the necessary competency and awareness for each role and responsibility that involve in the operational excellence. The competency can be achieved by training, or experience. Evidence of competency shall be retained.

2.4.5 Motivation for operational excellence process

The organization shall determine, provide, and maintain the operational excellence process that recognised and reward the operational excellence projects.

2.5 Operational excellence implementation process

2.5.1 Operational excellence program

The organization shall plan, implement, and control the operational excellence program. The program shall include the schedule to:

- i) initiate the operational excellence project,
- ii) operational excellence project review and meeting,
- iii) operational excellence project submission and assessment.

To support the operational excellence program, the organization shall determine the criteria to set the:

- a) operational excellence project objectives;
- b) establishing criteria for;
 - 1) the operational excellence processes;
 - 2) the acceptance of operational excellence projects;
- c) determining the resources needed to achieve operational excellence objectives and requirements;
- d) implementing control of the operational excellence processes in accordance with the criteria;
- e) determining, maintaining and retaining documented information to the extent necessary to have confidence that the operational excellence processes have been carried out as planned.

2.5.2 Determine and select operational excellence projects

The organization shall have a documented process to determine, document and select the continual improvement for operational excellence projects. The organization operational excellence project

OPERATIONAL EXCELLENCE – Management System

identification and selection shall include methodology and criteria for project prioritization.

The organization shall develop the operational excellence project charter for selected project. At minimum, the operational excellence project charter shall include:

- a) statement of the scope,
- b) project goals,
- c) team involved in the project

Operational excellence project charter shall be update and retained.

2.5.3 Operational excellence projects approach

The organization shall maintain a documented information for operational excellence project approaches. The approaches shall include:

- a) determine operational excellence approaches for various types operational excellence improvements;
- b) team approaches;
- c) cause analysis or process analysis (see note);
- d) the use of appropriate error-proofing methodologies for nonconformity or failure cause due to human error.
- e) implementation and risk analysis of improvement actions (see 2.5.7),
- f) verification of the effectiveness of improvement actions (see 2.5.4 and 2.5.5),

Note: The operational excellence approaches can be divided to solve the common cause (by using six sigma DMAIC methodology) and special cause (by using 8-Discipline team approaches) type of

OPERATIONAL EXCELLENCE – Management System

nonconformity. While process analysis is more common for lean (eliminate or minimise waste) related project.

2.5.4 Reporting operational excellence project

The organization shall determine and develop the methodology to report operational excellence project that include:

- a) reporting format;
- b) presentation format;
- c) operational excellence project results including tangible and intangible benefits;
- d) operational excellence lesson learns and future project;

Note: The format should be kept to minimum to promote the innovative and creative reporting and presentation of operational excellence project.

2.5.5 Assessing operational excellence project

The organization shall determine and develop the method to assess the operational excellence project effectiveness that include;

- a) operational excellence project selection;
- b) operational excellence teamwork;
- c) operational excellence project level of innovation and creativity;
- d) operational excellence project impact;

2.5.6 Changes initiate from operational excellence project

Any improvement action initiated from operational excellence project, the organization shall determine the risk, and their potential consequences.

OPERATIONAL EXCELLENCE – Management System

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Dr. Edly is the founder and director of EFR Certification, an international certification body. With good interpersonal and communication skills, he conducts a variety of high-impact training

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“Operational Excellence (OE)” – Management System Requirements, guidance and assessment criteria

Operational excellence is a mindset that embraces sustainable continual improvement within an organization. Operational excellence not just about reducing costs or increasing productivity in the workplace. It's about creating the company culture that will allow you to produce valuable and excellence products and services for your customers and achieve long-term sustainable growth.

Operational excellence is a journey that involves applying the right tools to the right processes. There are three elements of operational excellence presented in this book. The first elements is the “minimum requirements” or the structure of the OE. The second element is the “guidance for use” and third element is “OE assessment criteria”.



Dr. Edly Ramly is a fellow for Industrial Engineering Operation Management Society (US). He is an active consultant specializing in operational management and lean-six sigma. His experience is in the field of automotive, where this field concerns the effectiveness and efficiency of operations through waste elimination.



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